

Social Status and Subjective Perceptions of 250 Men After Myocardial Infarction

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RECOVERY from the serious illness of myocardial infarction, as physicians have long recognized, involves not only physiological adaptation but also numerous complex psychological and social adjustments. Among the many significant elements influencing the nature of the recovery process is the "perceptual screen" through which the patient experiences the disease. Subjective experience and interpretation of symptoms contribute to the patient's fundamental decision as to whether or not he will seek a physician and at what stage of the disease he will do so. Perception of symptoms influences the reporting of ailments that a patient will describe to the physician, and this reporting, in turn, influences the physician in framing the medical therapy and psychological support that he will provide (1-4).

In addition, the subjective appraisal by the patient of the physician-patient relationship has implications for the course of recovery and rehabilitation. For example, the patient's per-

ception of the physician helps to determine the level of faith he has in him and whether he wishes to continue receiving care. It may influence the degree to which the patient accepts and is willing to follow the advice of his physician concerning medication, physical exertion, work, family life, sexual performance, and recreational activities, among other things (5-8).

In research on illness behavior, much suggestive evidence has been collected on the nature of the relationship of social and psychological variables to patterns of development of illness, perception of symptoms, seeking of medical care, and the course of recovery. One key variable that appears to be associated with both the nature of objective reality and the character of subjective experience in illness is the patient's social status. In many recent studies, position in the social structure has been found to be related to such phenomena as the patterning of ailments, the nature of therapy, the use of outpatient services, and the character of communication with medical and psychiatric personnel (9-14).

This paper reports findings that point up possible relationships between social status variables and subjective perceptions during illness in a population of men who have suffered a first myocardial infarction. The report is based on an exploratory review of ways in which social status variables may be related to such elements as perception of symptoms, conception of the

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etiology of the disease, assessment of the adequacy of communication with physicians, and concerns about the meaning of the disease in future planning.

The data were collected during an extensive study of social and psychological factors in the process of recovery from serious illness. In the larger study, we are attempting to discover the elements that might be related to differential levels of adaptation to cardiac disease. In the early phases of the research it became apparent that the meaning of the disease varied among the population of patients. The larger study is still in process. This preliminary report is on one subsegment of the data and deals with the first 250 patients in the series.

Because our information was drawn solely from perceptions reported by patients in a hospital interview, it cannot be viewed automatically as an accurate assessment of reality. However, interview responses tap a crucial dimension of the experience of patients—the ways in which they interpret stimuli and define their situation. Insofar as a patient perceives events as having occurred, for example, they contribute to the content of his world, furnishing cues to which he may respond and serving as important determinants of subsequent interpretations and actions.

Methods

Data were obtained from a population of 250 men between the ages of 30 and 60 who had no previous major ailment and who therefore suffered the myocardial infarction as a first crisis of serious illness. Extensive efforts were made to insure that the health criteria be met. We specifically excluded men from the study who had been diagnosed as having conditions such as hypertension requiring treatment, diabetes, coronary insufficiency, and gout, among many others.

Cases were obtained from a group of 26 hospitals in the areas of Greater Boston and Worcester, Mass. In each of the cooperating hospitals, cases were first screened by a casefinder physician employed for the project. If a case fitted the strict criteria of selection for the study population, permission to invite the patient's participation was obtained from the physician responsible for his care. The casefinder physi-

cian then sent a report to the medical director of the project, a board-certified specialist in internal medicine, who decided whether the case fitted the criteria of no major previous illness and a diagnosis of unequivocal myocardial infarction.

Specially trained interviewers, each of whom held a master's degree in social work, carried out the interviews in three stages. The first interview usually took place in the hospital shortly before the patient was discharged, approximately 18 days post infarct. Two subsequent interviews were carried out 1 month post discharge and 1 year post infarct. The survey-research-type interviews contained a mixture of fixed alternative and open end questions. The data reported here were derived from the hospital interview, conducted when the experience of the infarct was still relatively fresh in the mind of the patient.

We employed two commonly used indicators as measures of social status: education and occupational level. For brevity, tabular materials relating to social status are presented in terms of the educational variable, and information on occupation is included in the text. Scales were derived from the Hollingshead index of social position (15).

In line with common practice, we employed the 0.05 level as the criterion for statistical significance. Because of the exploratory nature of this effort, we also included two findings below that level—insofar as the direction may be useful for generating hypotheses.

Findings

Recall of premonitory symptoms. From the medical standpoint, the distribution of reported symptoms in the premonitory phase of disease is often of vital importance for diagnosis, treatment, and rehabilitation. In past studies a large volume of findings has emerged on the association of social status variables with perception of pain and symptoms of illness. While these reports have introduced new insights, some have also led to controversy about methods and interpretations (3, 4, 14, 16-18). In this study we made an effort to explore the ways, if any, in which perception of symptoms might be related to that complex of elements commonly measured as social status. While the findings are mixed

and largely negative, they deserve scrutiny because they may cast light on aspects of the perception of the disease.

Patients were asked whether they experienced, before the acute onset of the illness, warning signs or symptoms that they perceived as being associated with the development of their heart condition. Fifty-eight percent of the patients reported symptoms that they believed were related to the illness. The reported experience of one or more of the symptoms was differentially distributed by educational level, with college-educated men being most likely to recall symptoms (table 1). While the relationship is not statistically significant, the trend suggests possible association ($P < 0.20$). No association between the symptom variable and the occupational level was found. In a study of heart patients closely comparable to our own in design, Johnson found no association between social variables and presence of reported symptoms during the premonitory phase (5).

To determine the distribution pattern of specific symptoms recalled as occurring during the premonitory phase, all patients were asked a series of questions concerning their experience. They reported the following individual occurrences:

<i>Symptoms</i>	<i>Percent</i>
Chest pain.....	36
Tightness in chest.....	18
Gastrointestinal (indigestion, nausea, vomiting, abdominal pain).....	15
Pain in shoulders, arms, or neck.....	14
Tiredness or fatigue.....	14
Sweating or feeling cold or faint.....	13
Shortness of breath on exertion.....	6
Palpitations.....	0
Edema or swelling.....	0

From the clinical standpoint these recollected symptoms may or may not have been directly related to the development of the myocardial infarction. They have meaning here insofar as they were remembered by the patient as significant during the period preceding the heart attack.

As the percentages indicate, substantial proportions of patients did not mention individual premonitory symptoms. In the interpretation of these data, an approach that excludes patients who reported no symptoms permits the elimination of three types of respondents: (a) those who actually experienced none, (b) those em-

ploying the "denial" defense mechanism, and (c) those who were unwilling reporters (19,20). Hence, analysis of the reported distribution of symptoms was carried out by examining the responses of the "perceivers," or those men who during the interview stated they had one or more symptoms (58 percent).

The following proportions of perceivers recalled one or more premonitory symptoms: one, 41 percent; two, 38 percent; three, 13 percent; and four or more, 8 percent. However, no association existed between either education or occupation and the number of symptoms recalled during the premonitory phase.

The date when symptoms were first noted was also explored. Among the perceivers, 30 percent recalled one or more symptoms 1 year or more before the infarction that led to hospitalization and 34 percent reported first symptoms as occurring from 1 month to less than 1 year before the attack. The remaining 36 percent first noted symptoms 1 month or less before hospitalization. Sometimes it is assumed that the better educated in the general population are more likely than others to note the onset of changes in their physical status. However, in this study, the time when one or more symptoms was first noted, as recalled by the patient, was not found to be associated with the variables of social status.

Further, within the perceiver group, the reporting of individual premonitory symptoms showed little or no statistical relationship to social status. Two exceptions, however, may deserve further exploration. One of the most com-

Table 1. Percentage of men with myocardial infarction, at each educational level, reporting one or more symptoms during premonitory phase

Educational level	Percent citing 1 or more symptoms ¹	Total number
Total.....	58.0	250
1 year or more of college.....	68.2	63
4 years of high school.....	60.3	78
10 or 11 years of school.....	52.2	46
Grades 7-9.....	53.1	49
6 grades or less.....	35.7	14

¹ Chi-square=6.86, degrees of freedom=4. Not significant, $P < 0.20$.

mon indicators of cardiac disease, chest pain, was reported in a way which indicated that social status was related to its perception. Similarly, experiencing indigestion, nausea, and vomiting (also common symptoms) seemed to be related to status indicators as well. The findings on these variables formed an unusual pattern. As table 2 indicates, a positive association was obtained between the reporting of chest pain and educational status ($P<0.10$), but a negative association for gastrointestinal symptoms ($P<0.01$). Stronger results were obtained when these symptom patterns were examined in relation to occupational level. The positive association between occupational level and reported chest pain was at the 0.01 level. Negative association with gastrointestinal symptoms was also at the 0.01 level.

A related issue is whether patients who reported both chest pain and gastrointestinal symptoms in the premonitory phase differ from those who reported only one symptom. Of the 91 patients who reported chest pain, 22 indicated that they also experienced gastrointestinal symptoms during the premonitory phase. In the group reporting the two symptoms, we found the pattern of negative association mirroring earlier findings when gastrointestinal pain was considered alone. Thus, of the total college-educated group with chest pain, only 10 percent reported gastrointestinal symptoms as well. On the other hand, 22.6 percent of all the high school graduates reported a combination of symptoms, as did 35.7 percent of the patients who completed 10 to 11 years of school. Of those who completed nine grades or less, 43.8 percent reported experiencing the two symptoms. Although chest pain alone apparently was associated in a positive way with the social status measures we employed, the fact of gastrointestinal pain in combination apparently weighted the association to a negative one.

Perception of etiology of the heart attack. The ways patients perceive the nature of their illness and its origins constitute important elements that physicians may take into account in the management of treatment. When interviewed, 30 percent of the patients reported that they had no opinion on the cause of the attack. An additional 35 percent cited one factor only as being the cause.

The patients in the study population exhibited a variety of views on the causes of their illness. When queried about responsible factors, the item most frequently mentioned as leading to the onset of the heart attack was mental or emotional distress—defined as continuing worry or tension rather than a specific traumatic emotional experience. The variable is one that some social scientists might generally characterize as “stress.” It was cited by 34 percent of the patients. No other factor was mentioned as frequently. The following items were mentioned in order of descending frequency: overindulgence in eating and smoking, 21 percent; overwork, 18 percent; physical exertion, 16 percent; and specific emotional or physical trauma, 9 percent. Less frequently mentioned were heredity, age, or general fatigue. In view of the relatively high number of times emotional stress was cited as the precipitating factor, it is interesting that of all the variables mentioned it was the only one showing a positive relationship to such social status indicators as occupation and education (table 3).

Physician-patient communication. One common complaint of patients is their difficulty in communicating fully with their physicians. They say, for example, that physicians are

Table 2. Percentage of men with premonitory symptoms, at each educational level, reporting chest pain and gastrointestinal symptoms during premonitory phase

Educational level	Percent citing chest pain ¹	Percent citing gastrointestinal symptoms ²	Total number with premonitory symptoms
Total.....	60. 6	25. 3	150
1 year or more of college.....	73. 8	14. 2	42
4 years of high school.....	63. 8	17. 0	47
10 or 11 years of school.....	53. 8	46. 2	26
Grades 7-9 ³	46. 7	33. 3	30
6 grades or less ³ ..	40. 0	40. 0	5

¹ Chi-square=7.03, degrees of freedom=3. Not significant, $P<0.10$.

² Chi-square=11.86, degrees of freedom=3, $P<0.01$.

³ The last 2 levels were combined for computation of chi-squares.

Table 3. Percentage of men with myocardial infarction, at each educational level, citing mental or emotional stress as a factor in the etiology of their heart attack

Educational level	Percent citing "stress", ¹	Total number
Total-----	34.0	250
1 year or more of college-----	47.6	63
4 years of high school-----	37.2	78
10 or 11 years of school-----	28.3	46
Grades 7-9-----	24.5	49
6 grades or less-----	7.1	14

¹ Chi-square=12.71, degrees of freedom=4, $P < 0.02$.

too busy, too unapproachable, or too unconcerned—or at least they appear so to complaining patients. In our hospital interview the patients were asked, "Has your doctor discussed your illness with you?" Seventy-one percent stated that he had. An important feature however, is the obverse side. Nearly 30 percent of the patients maintained that their physician had not discussed their illness with them. Further, the patterning in perception of communication with the physician varied by social status level. As table 4 indicates, the lower the status level of the patient, as measured by educational category, the less likely was he to report that the physician had discussed his case with him ($P < 0.001$). In considering these findings, it is important to note that at the interview virtually all the patients had been in treatment for at least 2.5 weeks. Hence, ample time had elapsed for discussion of the case between physician and patient.

Further investigation suggests that these findings do not simply reflect the treatment of service, or ward, patients as compared with private patients. Within the group of 85 service patients, 43 percent reported no discussion of their illness with the physician, but 27 percent of the 165 private patients responded in the same way.

Controlling for educational level within the service and private groups separately revealed the same pattern of association between education and communication. Obviously, since poor or less educated persons are most likely to be

service patients, some statistical association between being a staff patient and reported non-discussion with the physician might be expected. However, among private patients as well, the association between reported communication and educational level was clear. A chi-square test revealed that to a significant extent the less educated of the private patients were more likely than the higher educated to report that their physicians had not discussed the illness with them (chi-square=15.18, degrees of freedom=2, $P < 0.001$).

To some extent, the reporting of no discussion may have been due to lack of effort on the part of the patient in pressing the physician for discussion. Of the 109 patients who reported no discussion, 68 percent stated in the interview that they would have liked to ask the physician about such matters as prognosis, future work plans, activities that would be allowed after discharge, diet, and other topics related to the illness.

It was not feasible in this study to monitor communications between physicians and patients. Possibly all the physicians of the study population communicated fully with their patients before the first interview and the patients' impressions were inaccurate. However, evidence from other data suggests that negative perceptions by the patient shortly before discharge reflected reality rather than biased reporting or misimpressions.

In the second series of interviews, patients were seen approximately 1 month after dis-

Table 4. Percentage of men with myocardial infarction, at each educational level, reporting no discussion of illness with their physician

Educational level	Percent reporting no discussion ¹	Total number
Total-----	29.0	250
1 year or more of college-----	14.2	63
4 years of high school-----	20.5	78
10 or 11 years of school-----	39.1	46
Grades 7-9-----	47.0	49
6 grades or less-----	43.0	14

¹ Chi-square=20.69, degrees of freedom=4, $P < 0.001$.

charge from the hospital. At that time, 99 percent of the patients reported that they had discussed aspects of the illness with their physician. No differential perception existed then by social status level in regard to whether communication had taken place. Since all patients were able to perceive communication by the time of the second interview, it is unlikely that some element associated with social status prevented them from perceiving it accurately approximately 1 month earlier.

Physician-patient communication and occupational plans. Among the most critical concerns of male heart patients are the implications of their illness for employment. The social and emotional importance of employment for men has often been reviewed, and there is little need to emphasize its meaning for masculine self-image, family roles, social participation patterns, social identity, and a host of other areas (21, 22). The issue of future work potential is likely to be an important area of anxiety even though the concerns may not be consciously recognized or expressed by the patient.

In the hospital interview held shortly before their discharge, 60 percent of the patients reported that the physicians had discussed returning to work. Perhaps equally important is the fact that at the time of the interview 40 percent apparently did not perceive that such communication had taken place. Possibly the physicians gave advice about returning to work, but the patients did not perceive it as having been given. Perhaps the physicians preferred to discuss work issues closer to the time of discharge from the hospital. However, the finding is meaningful to us insofar as it helps to indicate the degree to which possible anxieties and concerns of patients about aspects of their future employment had been dealt with by the time of the hospital interview.

Whether they will be able to fulfill the usual requirements of their job is a practical question of central importance to male patients, particularly those engaged in blue collar occupations requiring physical exertion. For obvious reasons, physicians are more likely to advise restrictions on exertion for patients doing heavy labor than they are to give such recommendations to patients in sedentary occupations. When asked about the matter in the hospital

interview, patients with blue collar occupations, as expected, responded more frequently than white collar workers that their physicians had indeed advised them to reduce physical exertion on the job. However, only 15 percent of all patients in blue collar occupations reported receiving such advice by the time of the first interview.

Approximately 6 percent of the reporting population indicated that their physicians had advised them of the desirability of a change in occupation. All these patients were in the blue collar category. Minor variation existed in the frequency of reporting advice. The proportions were as follows: skilled workers, 11 percent; semiskilled workers, 10 percent; and unskilled workers, 17 percent.

Perhaps one basis for suggesting job changes was the physicians' concern that patients should avoid the physical exertion of blue collar employment. Why the advice was not reported by white collar, business, or professional workers is an item of interest for potential inquiry. Although many high-status patients reported that a great deal of emotional stress existed in their work and they considered stress to be a cause of their heart attack, physicians possibly took physical rather than emotional stress more seriously as a basis for recommending a job change.

Regardless of whether the physician had given advice on a job change, at the time of the first interview a relatively substantial proportion of patients in blue collar occupations had either decided not to return to their former jobs or were in the process of deciding. No patient reported his intention to retire. Among 73 semiskilled and unskilled laborers, 18 percent said that they did not plan to return to the same job and 21 percent stated that they did not know if they would return. Among 46 skilled workers, 9 percent stated that they would not return and 13 percent indicated uncertainty through the "don't know" response. The proportions were substantially lower among 128 white collar workers. Only 2 percent reported that they would not go back to the jobs they held before the illness and 4 percent were in the "don't know" category.

Up to the first interview, many blue collar workers apparently had been coping with a

major decision concerning their employment. Although some patients had received assistance through discussion with their physicians, among those who were highly concerned about job change it was generally the semiskilled and unskilled men who had not yet had advice on the matter by the time of the interview.

Comments

We have presented a set of empirical findings based on an exploratory study of the reported perceptions of heart patients and of some associations with social status. The results raise at least two major types of questions: First, how can the findings be explained? Second, regardless of their ultimate source, what are the implications of such findings for the treatment or management of the hospitalized cardiac patient?

While it is not feasible to review all possible hypotheses that might explain these data, several examples pertaining to status can be offered as ways of framing future analyses. For instance, in regard to the differential perception of two of the most prominent diagnostic clues, chest pain and gastrointestinal pain, some interesting possibilities emerge. One medically oriented explanation is that these perceptions are based on reality and that location of the pain is associated with location of the infarct. Thus, posterior infarcts have been observed as associated with gastrointestinal symptoms or intense vagotonia, according to some clinical reports (23, 24). These clinical reports have been disputed by some cardiologists. However, if they are valid they lead to still more problematic questions for investigation. If gastrointestinal symptoms are associated with location of the infarct, it may be desirable to explain why association exists between location of infarct and social status in our study population.

As indicated earlier, the role of social and cultural factors in affecting perception has been documented by other authors in a series of experimental and clinical investigations. One explanation of our findings might be that men of different educational levels tend to perceive differently the presence of pain in the body cavity. One may hypothesize that the better educated men, by virtue of their greater sophistication about illness, were more readily able to identify chest pain accurately, whereas the

less educated were able to interpret mainly in terms of previous experience with a common ailment of man, gastrointestinal distress.

At another level one may conjecture that the differential perception of symptoms was related to culturally linked patterns of defense mechanisms. For example, lower status men, coming primarily from working and lower class backgrounds and having fewer resources, might feel more threatened by the meaning of chest pain and its implications of financial cost, family disruption, and work disability. Thus they might tend to interpret objective pain in the way that is least threatening and most culturally acceptable, perceiving it as minor gastric distress (12, 14).

An alternative explanation, which may deserve further investigation, is that the results were due to differential correction of perception on the basis of reality testing. According to this thesis, the better educated men, though they originally may have experienced gastrointestinal symptoms, may have reinterpreted this symptom while in the hospital as having been chest pain.

The finding concerning the association of social status with beliefs about stress as a contributing factor in etiology may be interpreted in several ways. Given the common cultural assumptions concerning stress and heart disease, one may hypothesize that the data in table 3 are the product of the tendency of more highly educated people to be better informed about common theories concerning illness. However, because the popular media and common folk belief often emphasize that tension and anxiety can lead to heart attacks, it is surprising that there should be such marked differential acceptance of this information according to educational level or social status.

It is also possible that, although all social groups share the information, members of each group actually differ in their perception of the determining role of emotional stress. Two factors may account for the patterns of distribution. First, people of high social status, or at least those in this study, may actually experience more emotional stress and tension than those of lower social status. This thesis has been the subject of a large volume of recent research, producing conflicting conclusions. As one re-

view of the pertinent literature recently showed, evidence on the relationship between social class and stressors of all types is "equivocal" (18).

A second possibility is that the cultural definition of stress varies among status groups. Although the actual amount of life stress may be theoretically the same at all social levels, according to this explanation persons of higher social status may be more likely to label and report life conditions as stressful, while persons of lower status may accept analogous conditions as normal contingencies of life.

The data on patient perception of communication with physicians bears particular problems of interpretation, some of which arise from whether or not the perceptions were correct and were accurately reported. One possibility is that the level of communication actually varied by status level of the patient and that the perceptions recorded were correct. Or perhaps the physicians did in fact communicate fully with patients and the variation was solely in the accuracy of perception by patients of differing social status levels. A third possibility is that the patients were subsequently incorrect in reporting their original perceptions. Hence, the real variation in communication may have occurred along lines other than those of status level, but it was differentially perceived by patients of varying status levels.

Regardless of which of the three possibilities correspond to reality, these data point to the presence of communication problems between patients in the study population and the physicians treating them. If the perceptions were accurate, they point to a gap in communication between physician and patient at a point relatively far along in the program of therapy. At the very least, they provide clues to the nature of the psychological state of these patients, reflecting anxieties and confusion in their interaction with the physicians.

Perception of communication with the physician regarding work plans also raises several points regarding policy in treatment and its consequences. The date when advice on work plans should be given to patients by physicians is a matter of individual clinical judgment. Our purpose has been to report on the patterning of such advice at a particular point in time. The data imply that when the patients were about to be

discharged from the hospital, significant proportions of the men had not yet received guidance concerning their work. One can hypothesize that a delay in discussing work plans may have positive and therapeutic benefits for patients. The topic has so great an emotional overlay that postponement could be fortuitous, avoiding the stirring up of anxieties and tensions that may interfere with physical progress toward recovery. On the other hand, delay in handling the issue may exacerbate anxieties about life changes at a critical time and may hamper the adjustment of the patients as well as their families.

Our findings on perception of symptoms, etiology, and communication are tentative, and further investigation with other and large study populations may reveal that variables other than social status are associated with the differential reporting by patients. The results may also underline a principle familiar to practicing physicians; namely, that information presented by the patient is mediated not simply by what has been occurring at the physiological level but by social and psychological influences. The results imply that diagnosis and the framing of programs of therapy might be rendered more effective if physicians consider how social status may be associated with the perception of particular symptoms by the patient and with interpretation of the content and character of communication.

Moreover, recognizing these phenomena of differential perception may help provide criteria useful in mapping health education programs for differing target populations. It may be desirable, for example, to frame differing educational programs for particular status groups. If lower status groups are not likely to perceive chest symptoms as readily as other groups, then efforts directed toward informing this population may succeed in producing earlier identification of symptoms and may evenuate in bringing them to medical attention at a time when possible preventive measures or early treatment may be undertaken.

Summary

Two hundred and fifty men in Boston and Worcester, Mass., who had recently experienced a first myocardial infarction were interviewed in

connection with a study of social and psychological factors in recovery from heart disease. The patients were between the ages of 30 and 60 and had no previous major ailments. In interviews conducted shortly before they were discharged from the hospital, they responded to a series of questions designed to elicit their perceptions of aspects of the development of their illness and of the degree and content of communication with their physicians.

An exploratory examination of possible relationships between the perceptions and social status of the patients revealed that reported chest pain during the premonitory phase varied positively with status, while reported gastrointestinal symptoms varied inversely. A positive association was found between status and perception of emotional stress as an etiological factor. Patients from the lower status levels reported significantly less discussion with their physicians concerning the illness, and their perception of advice received indicated possible communication gaps concerning plans for work after convalescence.

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